Starting The Conversation
Performance of a Brief Dietary Assessment and Intervention Tool for Health Professionals

Amy E. Paxton, MPH, Lisa A. Strycker, MA, Deborah J. Toobert, PhD, Alice S. Ammerman, DrPH, RD, Russell E. Glasgow, PhD

This activity is available for CME credit. See page A4 for information

Introduction: For chronic disease prevention and management, brief but valid dietary assessment tools are needed to determine risk, guide counseling, and monitor progress in a variety of settings. Starting The Conversation (STC) is an eight-item simplified food frequency instrument designed for use in primary care and health-promotion settings.

Purpose: This report investigates the feasibility, validity, and sensitivity to change of the STC tool, a simplified screener instrument for assessment and counseling.

Methods: Data from an ongoing practical efficacy study of type 2 diabetes patients in a diverse population (N=463) were used to document STC validity, robustness, stability, and sensitivity to change from baseline to 4 months. Data were collected from 2008 to 2010, and they were analyzed for this report in 2010.

Results: The eight STC items and summary score performed well. STC items and the summary score were moderately intercorrelated ($r = 0.39 - 0.59$, $p < 0.05$). The STC summary score was significantly correlated with the NCI fat screener at baseline ($r = 0.39$, $p < 0.05$), and change in the STC summary score correlated with reduction in percentage of calories from fat ($r = 0.22$, $p < 0.05$) from baseline to 4 months. The STC was sensitive to the intervention, with intervention participants improving significantly more than controls on the summary score ($M = 1.16$ vs 0.46, $p < 0.05$).

Conclusions: The brief STC is a relatively simple, valid, and efficient tool for dietary assessment and intervention in the clinical setting. It is available in English and Spanish and is in the public domain. Researchers and practitioners are encouraged to assess its utility in other settings and with other dietary interventions.

(Am J Prev Med 2011;40(1):67–71)

Introduction

Valid measures of health behaviors are necessary to guide counseling in primary care and public health settings as a means of chronic disease prevention and management.[1–4] Current research-based dietary assessment tools tend to be costly and inappropriate for time-limited primary care or public health settings. Food diaries are burdensome and can influence behavior, diet histories are time consuming, and 24-hour dietary recalls are expensive.[5] Existing brief dietary assessment tools tend to be nutrient- or food-group–specific, or take longer than 10 minutes to complete.[6–11] Valid and brief dietary assessment tools for primary care settings are nearly absent. Because dietary patterns rather than single nutrients influence the development of chronic diseases, real-world dietary assessment tools must be brief and actionable, and focus on dietary patterns.[12–18]

Starting The Conversation (STC) is a simplified screening instrument designed for nondietitians in clinical practices for assessment and counseling. It identifies dietary patterns and was derived from a validated 54-item instrument.[19] Using data collected in a diabetes self-management intervention study conducted in the primary care setting, the present brief report further investigates the STC's feasibility, validity, and sensitivity to change.

From the Center for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill (Paxton, Ammerman), Chapel Hill, North Carolina; Oregon Research Institute (Strycker, Toobert), Eugene, Oregon; and Institute for Health Research, Kaiser Permanente Colorado (Glasgow), Denver, Colorado

Address correspondence to: Amy E. Paxton, MPH, University of North Carolina at Chapel Hill, Center for Health Promotion and Disease Prevention, 1700 Martin Luther King Jr. Boulevard, Chapel Hill NC 27599-7426. E-mail: apaxton@unc.edu.

0749-3797/$17.00
doi: 10.1016/j.amepre.2010.10.009

Methods

Design Overview

The STC was administered from 2008 to 2010 with other measures at baseline and 4 months as part of a patient-randomized practical effectiveness trial[20] to evaluate the impact of interactive diabetes self-management intervention relative to "enhanced" usual care.

Recruitment

Recruitment is detailed elsewhere.[20] Adults with type 2 diabetes were recruited from primary care medical offices within Kaiser Colorado (KPCO). Potential participants were mailed letters, including a postage-paid return postcard to decline further contact. If no postcard was received, a project recruiter telephoned to explain the study and determine eligibility. Inclusion criteria included (1) aged 25–75 years; (2) diagnosed with type 2 diabetes for at least 1 year; (3) BMI of ≥25 kg/m^2 *and* at least one other heart disease risk factor; (4) having access to a telephone and Internet; (5) ability to read in English or Spanish; and (6) ability to perform physical activity as assessed by the Brief Physical Activity Readiness Questionnaire.[21] Taken together, the criteria were selected to target at-risk adult type 2 diabetes patients able to complete the requirements of the study. All procedures were approved by the KPCO IRB.

Of 2603 recruitment letters sent, 229 decliner postcards and 15 letters were returned. Of 2359 recruitment calls attempted, 544 patients were eligible and agreed to participate; 463 patients were randomized. The participation level was 82% (463/[544+17]=number of participants completing baseline divided by number confirmed eligible) or 37% (number of participants completing baseline divided by estimated eligible we attempted to contact; see Glasgow et al.[20] for details). Participant characteristics are presented in Table 1.

Measures

The eight-item STC is shown in Figure 1. Response options for the survey items are organized into three columns: the left column indicates the most healthful dietary practices (scored 0); the center column indicates less healthful practices (scored 1); and the right column indicates the least healthful practices (scored 2). Item scores are added to create a summary score (range 0–16), with lower summary scores reflecting a more healthful diet and higher scores reflecting the greatest room for improvement. The STC is available in English and Spanish in the public domain, and may be reprinted and used without charge or permission.

Participant characteristics included gender; age; Hispanic ethnicity; race; education; smoking status; health literacy (items recommended by Chew and colleagues[22]); and prior computer experience.

Dietary measures were the STC and the NCI Percent Energy from Fat (PFAT) screener, which assesses intake of 15 food types selected to optimally predict percentage of calories from fat.[23] BMI was obtained from electronic medical records and height and weight measurements. All measures were collected at baseline and 4 months.

Analyses

The eight STC items measured distinctly different aspects of eating behavior and were not expected to intercorrelate significantly;

Table 1. Baseline characteristics of participants randomized across three conditions (N=463), % unless otherwise indicated

Characteristic	All	UC (*n*=132)	CASM (*n*=169)	CASM+ (*n*=162)	*p*-value[a]
Age (years, M±SD)	58.4±9.2	58.7±9.1	58.7±9.3	57.8±9.3	0.618
Female	49.8	51.5	44.6	53.7	0.231
BMI (M±SD)	34.8±6.5	34.8±6.5	34.4±6.2	35.3±6.8	0.388
Race					0.525
American Indian/Alaskan	6.7	11.1	4.9	4.8	—
Asian	1.6	1.6	1.9	1.4	—
Black/African-American	15.4	12.7	17.8	18.4	—
White	72.0	70.6	74.1	70.7	—
Hispanic ethnicity	21.8	16.8	25.3	25.3	0.178
Income ($)					0.241
<49,999	47.3	50.4	45.7	46.0	—
50,000–89,999	35.2	36.6	33.5	35.7	—
≥90,000	17.5	13.0	20.6	18.2	—
High school or less	19.1	13.0	19.9	23.6	0.069
Low–moderate health literacy	5.9	7.6	6.0	4.3	0.495
Computer use (hours/week)					0.190
0–2.5	16.3	15.1	16.6	16.6	—
3–6.5	17.7	21.2	20.2	12.4	—
7–8.5	6.1	4.5	5.4	8.0	—
≥9	60.0	59.1	57.7	63.0	—
Smoke cigarettes	10.8	9.1	10.1	13.0	0.531

[a]One-way ANOVA or χ^2 test, as appropriate

CASM, computer-assisted self-management intervention; UC, usual care control condition

Starting The Conversation: Diet

(Scale developed by: the Center for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill, and North Carolina Prevention Partners)

Over the past few months:

1.	How many times a week did you eat fast food meals or snacks?	Less than 1 time ☐0	1–3 times ☐1	4 or more times ☐2
2.	How many servings of fruit did you eat each day?	5 or more ☐0	3–4 ☐1	2 or less ☐2
3.	How many servings of vegetables did you eat each day?	5 or more ☐0	3–4 ☐1	2 or less ☐2
4.	How many regular sodas or glasses of sweet tea did you drink each day?	Less than 1 ☐0	1–2 ☐1	3 or more ☐2
5.	How many times a week did you eat beans (like pinto or black beans), chicken, or fish?	3 or more times ☐0	1–2 times ☐1	Less than 1 time ☐2
6.	How many times a week did you eat regular snack chips or crackers (not low-fat)?	1 time or less ☐0	2–3 times ☐1	4 or more times ☐2
7.	How many times a week did you eat desserts and other sweets (not the low-fat kind)?	1 time or less ☐0	2–3 times ☐1	4 or more times ☐2
8.	How much margarine, butter, or meat fat do you use to season vegetables or put on potatoes, bread, or corn?	Very little ☐0	Some ☐1	A lot ☐2

SUMMARY SCORE (sum of all items): _____

Figure 1. Items and scoring instructions for the Starting The Conversation: Diet instrument

thus, measures of scale reliability were not calculated. Pearson product–moment correlation coefficients were computed at baseline to explore relationships among the STC items and summary score. To determine stability, Pearson product–moment baseline and 4-month correlation coefficients were calculated for the STC summary scale using usual care data only (n=114). Chi-square tests and t-tests were conducted, as appropriate, to test the STC items and summary score for robustness across a range of participant characteristics.

ANCOVAs were conducted, associating treatment condition with change in items and the summary scale from baseline to 4 months, to test for sensitivity to treatment. Baseline participant characteristics relating to the STC in univariate analyses were covaried. Data were collected from 2008 to 2010, and analyzed in 2010.

Results

Participants

A relatively diverse, heterogeneous sample of 463 adult outpatients with type 2 diabetes was recruited (Table 1). The sample was fairly representative of type 2 diabetes outpatients in the local area, based on distributions of age, race and ethnicity, BMI, and other factors compared to diabetes registry data. Most participants were older (mean age=58 years) and overweight or obese (mean BMI=34.8 kg/m^2). A range of income and education levels was represented. Slightly higher percentages of the sample were Hispanic and African-American than in the KPCO population of type 2 diabetes patients (22% Hispanic in the sample vs 17% in KPCO records and 15% African-American in the sample vs 11% in KPCO records). Twelve participants completed surveys in Spanish. There were no significant between-condition baseline differences on any of the measures in Table 1.

Descriptive Data

All of the STC items performed well. The measure was robust across gender, education level, smoking status, health literacy, and computer experience. Exceptions were that (1) older participants generally reported consuming less fast food ($\chi^2[2]=10.2$, $p<0.01$); soda ($\chi^2[2]=6.5$, $p<0.05$); and chips ($\chi^2[2]=12.1$, $p<0.01$) and more vegetables ($\chi^2[2]=9.4$, $p<0.01$), and (2) non-Hispanic participants generally reported consuming less soda ($\chi^2[2]=17.8$, $p<0.001$). Because of these differences, baseline age and Hispanic ethnicity were covaried in further analyses.

STC items were moderately intercorrelated, as expected because items assess different aspects of healthful eating. Individual items correlated significantly with the summary score (r =0.39–0.59, $p<0.05$). The fruit and vegetable items correlated most highly (r =0.41), suggesting a distinct subset.

Temporal Stability and Validity

In terms of construct validity, the correlation between the baseline STC summary score and fat intake as measured by the NCI fat screener was r =0.39, $p<0.05$. Change in the STC summary score correlated significantly with reduction in fat intake, r =0.22, $p<0.05$.

Four-month summary score correlations for participants in the usual care condition ranged from only $r = 0.40$ to 0.62 for individual items and $r = 0.66$ for the summary score (all $p < 0.05$), indicating that the assessment was stable over time without intervention.

Table 2. Change score in STC items and summary score, all cases and split by treatment condition, M±SD

Food item	All cases (n=372)	UC only (n=114)	Tx only (n=258)	p-value
Fast food	0.28±0.79	0.06±0.73	0.38±0.80	<0.001
Fruit	0.17±0.61	0.13±0.47	0.18±0.66	0.397
Vegetables	0.12±0.64	0.06±0.58	0.15±0.66	0.211
Sodas	0.07±0.58	0.09±0.67	0.07±0.54	0.760
Beans	–0.03±0.68	0.00±0.64	–0.05±0.70	0.495
Chips	0.15±0.67	0.07±0.65	0.18±0.67	0.144
Desserts	0.10±0.67	–0.01±0.64	0.15±0.68	0.035
Margarine	0.09±0.67	0.06±0.61	0.10±0.69	0.584
Eight-item summary score	0.94±2.08	0.46±1.93	1.16±2.11	0.002

STC, Starting The Conversation; Tx, treatment; UC, usual care control condition

Sensitivity to Change

The STC was sensitive to the intervention (Table 2). Randomized intervention participants improved significantly more than controls on two of the eight STC items (fast food and desserts) and on the summary score (M=1.16 vs 0.46, $p < 0.05$).

Discussion

Overall, the brief eight-item STC tool identified healthful and unhealthful dietary behaviors in a diverse sample, indicating the measure's feasibility for use in public health and primary care settings. These results are similar to performance of the longer Food Habits Questionnaire and Rate Your Plate.[24,25] The STC was robust across a variety of participant characteristics, was stable over time in the absence of treatment, was sensitive to treatment, and was a reasonably valid measure of dietary intake compared to the previously validated dietary-fat–focused NCI screener.[23] The current study used the STC for assessment, but previous studies have employed it as an intervention tool.[26]

The STC offers an attractive option for dietary assessment and intervention by nondietitians in busy clinical settings. To our knowledge, it is the shortest instrument available designed specifically to help clinic staff identify atherogenic dietary patterns and guide counseling.[27–29]

Although the STC compared favorably to serum carotenoid levels in a previous sample,[19] the tool has not been validated against a criterion standard of dietary intake (e.g., 3-day dietary recalls) in a large-scale trial. Other limitations include data from a single site (although relatively heterogeneous) and the absence of criterion standard bioassays. Further work is recommended to validate the STC in other populations and across multiple interventions focused on improving dietary intake.

This research was supported by R01 DK035524-21 from the National Institute of Diabetes and Digestive and Kidney Diseases.

No financial disclosures were reported by the authors of this paper.

References

1. CDC. The guide to community preventive services. www.thecommunityguide.org.
2. USDHHS. Healthy People 2010: understanding and improving health. Washington DC: Government Printing Office, 2000.
3. Whitlock EP, Orleans CT, Pender N, Allan J. Evaluating primary care behavioral counseling interventions: an evidence-based approach. Am J Prev Med 2002;22:267–84.
4. Glasgow RE, Ory MG, Klesges LM, Cifuentes M, Fernald DH, Green LA. Practical and relevant self-report measures of patient health behaviors for primary care research. Ann Fam Med 2005;3:73–81.
5. Willet W. Nutritional epidemiology. 2nd ed. New York NY: Oxford University Press, 1998.
6. Coates RJ, Serdula MK, Byers T, et al. A brief, telephone administered food frequency questionnaire can be useful for surveillance of dietary fat intakes. J Nutr 1995;125:1473–83.
7. Govig B, deSouza R, Levitan WB, et al. The Eating Assessment Table—an evidence-based nutrition tool for clinicians. Crit Pathw Cardiol 2009;8:55–62.
8. Block G, Gillespie C, Rosenbaum EH, Jenson C. A rapid food screener to assess fat and fruit and vegetable intake. Am J Prev Med 2000;18:284–8.
9. Kris-Etherton P, Eissenstat B, Jaax S, et al. Validation for MEDFICTS, a dietary assessment instrument for evaluating adherence to total and saturated fat recommendations of the National Cholesterol Education program step 1 and step 2 diets. J Am Diet Assoc 2001;101:81–6.
10. Baker AH, Wardle J. Increasing fruit and vegetable intake among adults attending colorectal cancer screening: the efficacy of a brief tailored intervention. Cancer Epidemiol Biomarkers Prev 2002;11:203–6.

11. Thompson FE, Kipnis V, Subar AF, et al. Evaluation of 2 brief instruments and a food-frequency questionnaire to estimate daily number of servings of fruit and vegetables. Am J Clin Nutr 2000;71:1503–10.
12. McCullough ML, Feskanich D, Stampfer MJ, et al. Diet quality and major chronic disease risk in men and women: moving toward improved dietary guidance. Am J Clin Nutr 2002;76:1261–71.
13. Hu FB. Dietary pattern analysis: a new direction in nutritional epidemiology. Curr Opin Lipidol 2002;13:3–9.
14. Trichopoulos D, Lagiou P. Dietary patterns and mortality. Br J Nutr 2001;85:1333.
15. Kant AK. Dietary patterns and health outcomes. J Am Diet Assoc 2004;104:615–35.
16. Jacques PF, Tucker KL. Are dietary patterns useful for understanding the role of diet in chronic disease? Am J Clin Nutr 2001;73:1–2.
17. Wonderling D, Langham S, Buxton M, et al. What can be concluded from the OXCHECK and British Family Heart Study: commentary on cost-effectiveness analysis. BMJ 1996;312:1274–8.
18. Little P, Margetts B. The importance of diet and physical activity in the treatment of conditions managed in general practice. Br J Gen Pract 1996;46:187–92.
19. Jilcott SB, Keyserling TC, Samuel-Hodge CD, Johnston LF, Gross MD, Ammerman AS. Validation of a brief dietary assessment to guide counseling for cardiovascular disease risk reduction in an underserved population. J Am Diet Assoc 2007;107:246–55.
20. Glasgow RE, Strycker LA, Kurz D, et al. Recruitment for an Internet-based diabetes self- management program: scientific and ethical implications. Ann Behav Med 2010;40:40–8.
21. Quinn E. PAR-Q: The Physical Activity Readiness Questionnaire, take the PAR-Q before you start an exercise program. sportsmedicine.about.com/od/fitnessevalandassessment/qt/PAR-Q.htm.
22. Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. Fam Med 2004;36:588–94.
23. Thompson FE, Kipnis V, Subar AF, et al. Performance of a short instrument to estimate usual dietary intake of percent calories from fat. Eur J Clin Nutr 1998;52(2S):S63.
24. Glasgow RE, Perry JD, Toobert DJ, Hollis JF. Brief assessments of dietary behavior in field settings. Addict Behav 1996;21:239–47.
25. Gans KM, Hixson ML, Eaton CB, Lasater TM. Rate Your Plate: a dietary assessment and educational tool for blood cholesterol control. Nutr Clin Care 2000;3:163–9.
26. Keyserling TC, Samuel-Hodge C, Jilcott SB, et al. Randomized trial of a clinic-based, community-supported lifestyle intervention to improve physical activity and diet: the North Carolina enhanced WISEWOMAN project. Prev Med 2008;46:499–510.
27. Mochari H, Gao Q, Mosca L. Validation of the MEFICTS dietary assessment questionnaire in a diverse population. J Am Diet Assoc 2008;108:817–22.
28. Gans KM, Risica PM, Wylie-Rosett J, et al. Development and evaluation of the nutrition component of the Rapid Eating and Activity Assessment for Patients (REAP): a new tool for primary care providers. J Nutr Educ Behav 2006;38:286–92.
29. Wakimoto P, Block G, Mandel S, Medina N. Development and reliability of brief dietary assessment tools for Hispanics. Prev Chronic Dis 2006;3:A95.